I.M. Systems Group, Inc. 3206 Tower Oaks Blvd, Suite 300 Rockville, MD 20852 Telephone (240) 833-1889 fax (301)770-8990

July 21, 2016

Federal Communications Commission
Ms. Marlene Dortch, Secretary
445 12th Street, S.W.
Washington, DC 20554

RE: Letter in response to RM-11681 Petition for Rulemaking: Ligado's Request to Allocate the 1675-1680 MHz band for Terrestrial Mobile Use Shared With Federal Use

Dear Ms. Dortch:

I. M. Systems Group, Inc. (IMSG) currently has over 200 employees in professional science and engineering teams supporting the National Oceanic and Atmospheric Administration's (NOAA) core environmental intelligence capabilities, namely, the environmental satellite remote sensing algorithms development and research-to-operations (R2O) transition, and numerical environment (land, atmosphere, and ocean) prediction.

NOAA/National Environmental Satellite, Data, and Information Service's (NESDIS) environmental satellite data integrity and timeliness are critical for providing real time monitoring of environmental hazards (e.g. hurricanes, tornados, severe storm, floods, droughts) to accurate environmental forecasting by NOAA's National Weather Service/National Centers for Environmental Prediction (NWS/NCEP) to give our society enough lead-time in the event of extreme weather and climate threats. NESDIS' current and next generation environmental satellites are relying on the availability of sufficient radio spectrum bandwidth to transmit large volumes of critical data that serve the above purposes.

Based on our 16 years of work within NOAA, we are aware every day of the value of the direct broadcasts from the Geostationary Operational Environmental Satellite (GOES) and will use the direct broadcasts from GOES-R series satellites in the 1675-1695 MHz radio spectrum. As we value consistency and infuse innovation into our work with NOAA (developing satellite algorithms that lead to more accurate predictions from GOES data), we know timely and reliable reception of data from NOAA's geostationary satellites is crucial to getting this taxpayer-funded technology to work as it needs to for the public good and our nation's security.

IMSG is also aware that many private sector companies that provide value-added meteorological and hydrological data products also rely critically on our work and the 100 percent reliability of this data. We believe radio frequency interference can be generated from strong terrestrial downlinks, which share the same spectrum as the relatively weak signals from GOES in space, and would have a devastating impact on all who rely on real-time weather forecasts in the U.S. and across the western hemisphere.

The weather enterprise is on the verge of launching a new generation of GOES satellites. The GOES-R series satellite program is a giant leap forward in technology, as IMSG's scientists and engineers contribute tremendous effort under federal funded contracts to transition research into its best operational capabilities. These satellites will offer more and different types of data products that will be more accurate, of higher resolution and greater quantity than the current system. And, that data will be available faster than the current satellite, in large part, attributable to the direct broadcast downlink and the environmental/hydrological data relay in 1675-1695 MHz band.

Working within NOAA on these crucial technologies, we know warnings to protect lives and property must be issued as rapidly as possible and be available under all conditions and situations. Direct downlink information must be available 100 percent on a 24/7/365 basis to NOAA users since we know that cellular networks and Internet capabilities are often taxed to their maximum during severe weather and natural disasters, whereas the GOES / GOES-R direct broadcasts have very little infrastructure that is subject to failure during stressful conditions.

As noted in a Washington Post Capital Weather Gang[1] guest post on May 6, 2016:

"[T]he choice of which spectrum bands are shared should not endanger the reliability or the effectiveness of public safety meteorological and hydrological data flow from NOAA satellites. We note that the Presidential Memorandum[2] [ ] on the wireless broadband revolution in 2010 directed that spectrum repurposing must ... "take into account the need to ensure no loss of critical existing and planned Federal, State, local and tribal government capabilities."

While we understand the FCC's interest in advancing technology, IMSG knows that the dissemination of life saving weather information to the nation via GOES and the future GOES-R series of satellites every day is very important, and, interference would endanger the reliability and the effectiveness of public safety meteorological and hydrological data flow. We applaud the transmission of weather warnings via smartphones and tablet computers, but it is critical to note that Federal data received from NOAA satellites relying on technology and services developed by IMSG contributes substantially to the content made available on wireless broadband devices in the first place.

Today's NEXRAD weather radar data is routinely available over approximately five-minute intervals and are essential to forecast meteorologists. However, the higher resolution, faster data that will be available from GOES-R is likely to make comparable cloud top data taken at 5-minute rapid intervals a new tool to compliment this weather radar data. The new products that may be possible from these two time-comparable sources are only now under consideration by the weather enterprise.

This transition to GOES-R will be a generational change in meteorology and hydrology; why would we want to handicap the fastest and most reliable means of disseminating this new satellite capability before the $8.5 billion dollar satellite series is even brought into use? The satellites[3] are already designed and the first and second ones are either built or under construction, using the 1675-1695 MHz spectrum in their transmitters.

The interference caused by the sharing of the 1675-1680 megahertz band will significantly threaten the distribution of crucial weather/hydrological information from NOAA, which the nation, and, indeed our national security, relies on to respond immediately with the highest quality information to dangerous weather events like tornados, hurricanes and wildfires.

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[1] https://www.washingtonpost.com/news/capital-weather-gang/wp/2016/05/06/opinion-commercial-interests-may-block-transmission-of-vital-weather-data-we-cant-allow-it/

[2] https://www.whitehouse.gov/the-press-office/presidential-memorandum-unleashing-wireless-broadband-revolution

[3] GOES-R and GOES-S satellites under construction showing L-band transmit antennas http://farm2.staticflickr.com/1493/23884245579_32ac3a2311_b.jpg

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IMSG recommends that this spectrum not be shared with commercial interests. Thank you for the opportunity to share our views in this matter.

Sincerely,

Vance Y. Humv
President/CEO
I.M. Systems Group, Inc.
Email: humv@imsg.com
Tel: 240-833-1889

CC:

The Honorable John Thune, Chairman, Senate Commerce, Science and Transportation Committee

The Honorable Bill Nelson, Ranking Member, Senate Commerce, Science and Transportation Committee

The Honorable Marco Rubio, Chairman, Subcommittee on Oceans, Atmosphere, Fisheries, and Coast Guard

The Honorable Cory Booker, Ranking Member, Subcommittee on Oceans, Atmosphere, Fisheries and Coast Guard

The Honorable Richard Shelby, Chairman, Commerce, Justice, Science, and Related Agencies Subcommittee

The Honorable Barbara Mikulski, Vice Chairwoman, Senate Appropriations Committee

The Honorable Fred Upton, Chairman, House Energy and Commerce Committee

The Honorable Frank Pallone, Jr, Ranking Member, House Energy and Commerce Committee

The Honorable Greg Walden, Chairman, Communications and Technology Subcommittee

The Honorable Anna G. Eshoo, Ranking Member, Communications and Technology Subcommittee

The Honorable Jim Bridenstine, Chairman, Subcommittee on Environment, House Science, Space and Technology Committee

The Honorable Suzanne Bonamici, Ranking Member, Subcommittee on Environment, House Science, Space and Technology Committee

The Honorable John Fleming, Chairman, Subcommittee on Water, Power and Oceans, House Natural Resources Committee

The Honorable Jared Huffman, Ranking Member, Subcommittee on Water, Power and Oceans, House Natural Resources Committee

The Honorable John Culberson, Chairman, Commerce, Justice, Science and Related Agencies Subcommittee

The Honorable Mike Honda, Acting Ranking Member, Commerce, Justice, Science and Related Agencies Subcommittee

The Honorable Christopher "Chris" Van Hollen, Ranking Member, House Budget Committee

The Honorable Lawrence E. Strickling, Assistant Secretary for Communications and Information and NTIA Administrator, Department of Commerce

The Honorable Dr. Kathryn D. Sullivan, Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator